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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,994

06/16/2006

Masashi Sato

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25944 7590 02/17/2011

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EXAMINER

KOLLIAS, ALEXANDER C

ART UNIT

PAPER NUMBER

1725

NOTIFICATION DATE

DELIVERY MODE

02/17/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
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Office Action Summary	Application No. 10/581,994	Applicant(s) SATO ET AL.	
	Examiner ALEXANDER C. KOLLIAS	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/28/2011 has been entered.

2. It is noted that claims 5 and 8 are pending, claims 1-4 and 6-7 and 9 are canceled. Although claims 5 and 8 were amended to recite new limitation drawn to the metal hydrate recited in the present claims, it is noted that the prior art references of record, Sato et al, Lewin, and Nakamura et al remain relevant against the present claimed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (US 2003/0207979) in view of Lewin (US 2002/0013393) and Nakamura et al (US 2003/0207106).

Regarding claim 5, Sato et al discloses an insulated wire comprising a flame retardant resin composition. The fire retardant resin composition is disclosed as comprising 30 to 90 parts by weight polyethylene having a melt flow rate of less than 5 g/10 min and a density of at least 0.30 g/cm³ (disclosed component a), about 5 to 65 parts by weight of an olefin type polymer containing intra molecular oxygen atoms such as (component b1), 5 to 40 parts by mass of at least one polymer such as acid modified olefin polymer, acid modified styrene thermoplastic, acid modified polyethylene, etc (components c1-c4) and 30 to 250 parts by mass of a metal hydroxide such as aluminum or magnesium hydroxides (Page 1 [0024]-[0028], Page 2 [0029]-[0034], Page 4 [0107]-[0110]). It is noted that the amount of metal hydroxide or hydrate

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disclosed by the reference is identical to that recited in claim 5. Further, it is noted that the density and melt flow rate of the polyethylene are within the ranges of 5 g/10 min or less and 0.90 g/cm³ or more presently recited in claim 5. Given that the reference discloses that acid modified styrene, the condition that at least one polymer (B) is modified by acid recited in claim 1 is met. Polyethylene comprises 30 to 90 parts by mass in the total of 100 parts by mass (30 to 90 wt %) while the acid modified styrene comprises 10 to 40 parts by mass in the total of 100 parts by mass (10 to 40 wt %) comprising components (a) (b1) and (c) (Page 3 [0093] and Page 4 [0105]). Given that the reference discloses acid modified styrene it is clear that the disclosed resins meet the proviso that compositions comprises at least one resin modified by acid. It is noted that the amounts of the resin are with the range of 30 to 90 wt % of polyethylene and 70 to 10 wt % of resin (B) recited in claim 1. The reference that the composition is cross-linked (Page 2 [0035]). Given that the reference does not disclose halogenated compounds added to the composition, it is clear that the coating composition is non-halogenated. Additionally, Sato teaches that the composition comprises fire retardant adjuvants (Page 4 [0111]).

While Sato does discloses the use of zinc compounds in the fire retardant composition, the reference does not disclose the specific zinc compound or amounts thereof as required by the present claims

Lewin discloses a polymeric flame retardant composition comprising sulfur compounds such as zinc sulfide which are added to the compositions in amounts of 1-3 wt % in order to obtain a pronounce flame retardancy (Page 1 [0009]-[0010], Page 2 [0011]). At combustion zinc sulfide is oxidized to higher valency products and interact with the polymer to render a flame-retarding surface barrier (Page 2 [0011]). It is noted that the amounts of 1 to 3 wt % zinc sulfide

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in within the amounts of zinc compound, on a weight percent basis, i.e. 0.76 to 5.40 wt % of a zinc compound, recited in claim 5

Given that both Sato and Lewin are drawn to fire retardant polymeric compositions, in light of the particular advantages provided by the use and control of zinc sulfide and amounts thereof as taught by Lewin, it would therefore have been obvious to one of ordinary skill in the art to include such compounds in the composition disclosed by Sato with a reasonable expectation of success

The combined disclosures of Sato and Nakamura teach disclose all the claim limitations as set forth above. However, the references do not disclose a wiring harness comprising a single wire bundle containing non-halogenated insulated wires and a wiring harness protective material for covering the wire bundle comprising vinyl chloride as the base material.

Nakamura et al discloses a wire harness material comprising a substrate made of non-halogen based resin and a wire bundle comprising wires coated with a non-halogen based resin or a bundle comprising a mixture of non-halogen coated and polyvinyl chloride coated wires (Page 3 [0040]). The wire harness comprises a tape base painted with adhesive which prevents plasticizers and adhesive adjuvants from migrating; thereby the wire harness obtains a stable and durable cable quality (Page 3 [0040]).

Given that both Sato and Nakamura et al are drawn to non-halogenated coatings for wires, in light of the particular advantages provided by the use and control of the wire harness and cable bundles as taught by Nakamura et al, it would therefore have been obvious to one of ordinary skill in the art to include such wire harnesses and wire bundles comprising the coating disclosed by Sato with a reasonable expectation of success.

Regarding claim 8, Sato et al discloses an insulated wire and a wiring harness comprising a flame retardant resin composition. The fire retardant resin composition is disclosed as comprising 30 to 90 parts by weight polyethylene having a melt flow rate of less than 5 g/10 min and a density of at least 0.30 g/cm^3 (disclosed component a), about 5 to 65 parts by weight of an olefin type polymer containing intra molecular oxygen atoms such as (component b1), 5 to 40 parts by mass of least one polymer such as acid modified olefin polymer, acid modified styrene thermoplastic, acid modified polyethylene, etc (components c1-c4) and 30 to 250 parts by mass of a metal hydroxide such as aluminum or magnesium hydroxides (Page 1 [0024]-[0028], Page 2 [0029]-[0034], Page 4 [0107]-[0110]). It is noted that the amount of metal hydroxide or hydrate disclosed by the reference is identical to that recited in claim 5. Further, it is noted that the density and melt flow rate of the polyethylene are within the ranges of 5 g/10 min or less and 0.90 g/cm^3 or more presently recited in claim 8. Given that the reference discloses that acid modified styrene, the condition that at least one polymer (B) is modified by acid recited in claim 8 is met. Polyethylene comprises 30 to 90 parts by mass in the total of 100 parts by mass (30 to 90 wt %) while the acid modified styrene comprises 10 to 40 parts by mass in the total of 100 parts by mass (10 to 40 wt %) comprising components (a) (b1) and (c) (Page 3 [0093] and Page 4 [0105]). Given that the reference discloses acid modified styrene it is clear that the disclosed resins meet the proviso that composition comprises at least one resin modified by acid. It is noted that the amounts of the resin are with the range of 30 to 90 wt % of polyethylene and 70 to 10 wt % of resin (B) recited in claim 1. The reference discloses that the composition is cross-linked by radiation, i.e., electron beam irradiation (Page 2 [0035]). Given that the reference does not

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disclose halogenated compounds added to the composition, it is clear that the coating composition is non-halogenated. Additionally, Sato teaches that the composition comprises fire retardant adjuvants (Page 4 [0111]).

While Sato does disclose the use of zinc compounds in the fire retardant composition, the reference does not disclose the specific zinc compound or amounts thereof as required by the present claims

Lewin discloses a polymeric flame retardant composition comprising sulfur compounds such as zinc sulfide which are added to the compositions in amounts of 1-3 wt % in order to obtain a pronounced flame retardancy (Page 1 [0009]-[0010], Page 2 [0011]). At combustion zinc sulfide is oxidized to higher valency products and interact with the polymer to render a flame-retarding surface barrier (Page 2 [0011]). It is noted that the amounts of 1 to 3 wt % zinc sulfide in within the amounts of zinc compound, on a weight percent basis, i.e. 0.76 to 5.40 wt % of a zinc compound, recited in claim 8.

Given that both Sato and Lewin are drawn to fire retardant polymeric compositions, in light of the particular advantages provided by the use and control of zinc sulfide and amounts thereof as taught by Lewin, it would therefore have been obvious to one of ordinary skill in the art to include such compounds in the composition disclosed by Sato with a reasonable expectation of success

The combined disclosures of Sato and Nakamura teach disclose all the claim limitations as set forth above. However, the references do not disclose a wiring harness comprising a single wire bundle containing non-halogenated insulated wires and a wiring harness protective material for covering the wire bundle comprising vinyl chloride as the base material.

Nakamura et al discloses a wire harness material comprising a substrate made of non-halogen based resin and a wire bundle comprising wires coated with a non-halogen based resin or a bundle comprising a mixture of non-halogen coated and polyvinyl chloride coated wires (Page 3 [0040]). The wire harness comprises a tape base painted with adhesive which prevents plasticizers and adhesive adjuvants from migrating; thereby the wire harness obtains a stable and durable cable quality (Page 3 [0040]).

Given that both Sato and Nakamura et al are drawn to non-halogenated coatings for wires, in light of the particular advantages provided by the use and control of the wire harness and cable bundles as taught by Nakamura et al, it would therefore have been obvious to one of ordinary skill in the art to include such wire harnesses and wire bundles comprising the coating disclosed by Sato with a reasonable expectation of success.

Response to Arguments

7. Applicant's arguments filed 1/28/2011 have been fully considered but they are not persuasive.

8. With respect to Applicants' arguments that magnesium hydroxide when utilized in the less than the recited amount fails to provide adequate flame retardancy to the resin composition while amount within the presently claimed range provides the desired flame retardancy, it is noted that (a) Sato discloses an amount of metal hydroxide, e.g. aluminum or magnesium hydroxide of 30 to 250 parts, which is identical to that presently claimed. That is, the reference already recognizes the criticality of the particular metal hydroxide claimed as well as amounts

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and therefore it is the Examiner's position that there is nothing unexpected or surprising regarding the flame retardancy results of the embodiments disclosed in the present Specification with respect to the amounts of magnesium hydroxide.

9. With respect to Applicants' arguments regarding unexpected results, specifically the results based on the presence of zinc sulfide in the cross-linked flame retardant composition as compared to other zinc compounds, i.e. zinc borate, while it is noted that Comparative Example 8 and Inventive Example 8 are proper side by side comparisons, differing only in the type of zinc compound, it is significant to note that the Inventive Example 8 is not commensurate in scope with the scope of the closest prior art of record. Lewin discloses the use of zinc sulfide which are added to the compositions in amounts of 1-3 wt % in order to obtain a pronounced flame retardancy. The Inventive Example 8 in Table 1 of the present Specification comprises 4.98 wt % (10 parts total) of zinc sulfide, which while is within the scope of the presently claimed amount of 0.76 to 5.40 wt % (1 to 20 parts) is outside the upper bound amount of 1 to 3 wt %. That is based on sole comparison of Comparative Example 8 to Inventive Example 8, it is simply not possible to determine if results obtained for Conditions A and B are in fact unexpected or surprising.

10. Applicants argue that the secondary reference, Lewin, discloses a combination of (1) at least one polyphosphate (2) a sulfur containing compound, (3) a catalyst, and (4) a nitrogen-containing compound, and thus, given the differences in the compositions disclosed by Lewin and Sato, one of ordinary skill in the art would not modify the composition of Sato with the zinc

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sulfide and amounts thereof as taught by Lewin. However, it is significant to note that (a) the primary reference is open to the inclusion of other flame retarding ingredients, i.e. disclosed in Sato as adjuvants and (b) the reference contemplates the use zinc containing compounds as well as nitrogen containing flame retardant adjuvants, i.e. zinc borate and nitrogen type retardant, disclosed on Page 4 [0111] of Sato. That is to say, Sato is open to the inclusion of the other flame retardants and is simply not limited to the metal hydrates disclosed in the reference. Secondly, it is noted that the present claims are open to the inclusion to additional ingredients, (c.f. the phrase comprising), and thus do not limit the inclusion additional ingredients disclosed in either Sato or Lewin.

11. Applicants state that "[A]mmonium polyphosphate is primarily responsible for providing flame retardancy to the composition compositions (of Lewin – emphasis added. See Paragraph [0004] and [0016]". However, it is significant to note that [0004] of Lewin discloses principles of intumescence, i.e., formation of surface barrier during combustion. Further, this section discloses other ingredients that are used in combination with ammonium polyphosphate (APP) to obtain the desired flame retardancy, and not simply that APP is primary contributor to flame retardancy. Further, [0016] of Lewin discloses that "[a] certain degree of flame retardancy is obtained with the sulfur derivatives and especially in the presence of other ingredients". That is, this part of the disclosure in Lewin is drawn to synergistic combination of APP and other ingredients and not simply to APP alone. Though, it is significant to note that even if Lewin were to require that a combination of zinc sulfide and APP were utilized in combination, as argued by Applicants above, as set forth earlier Sato already recognizes that multiple flame

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retardant adjuvants may be utilized. i.e., as evidenced by the disclosure of adjuvants, in the plural and not the singular in the reference. Further, it is significant to note that APP is a nitrogen containing flame retardant and falls within contemplated adjuvants disclosed in Sato, i.e. nitrogen type retardant.

12. Applicants argue that Lewin does not teach that zinc sulfide alone provides flame retardancy. As evidence of their position, Applicants point to [0007] of Lewin which discloses “[I]t have been surprisingly found that a high degree of flame retardancy can be imparted to glass-containing polymer by using APP with char-forming agents but with relatively small amount of meta-based catalysts and of sulfur compounds”. However, as discussed above, neither the claims nor Sato exclude the combination of the flame retardants disclosed in Lewin. Secondly, it is significant to note that Page 2 [0011], which was cited by the Examiner in the rejections above for the teaching of zinc sulfide and amounts thereof, is drawn to a much broader teaching of the uses of zinc sulfide. Paragraph [0011] of Lewin discloses that “[Z]nS is thus known to be compatible with polymers. It has surprisingly been found that already small amounts of ZnS, in the range of 1-3 weight % of a polymer composition, yield a pronounced flame retardancy effect. At the combustion temperature, in the presence of air, the zinc sulfide is oxidized to higher valency products such as sulfur, zinc sulfoxylate, ZnSO_2 , thiosulfates, sulfites and finally sulfates. These oxidation reactions, which usually do not produce hydrogen sulfide, are rapid at the ignition temperature, but the oxidation products, which are more reactive than the sulfide, interact with the polymer and the other ingredients of the plastic composition to render the flame-retarding surface barrier.”. That is, this section of Lewin discloses several key features

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(a) the utilization of zinc sulfide in polymeric composition in known and compatible with polymers and (b) the chemistry of zinc sulfide during combustion and benefits in terms of rendering a flame retarding surface due to interaction of the compound with the polymer as well as other ingredients in the polymer.

13. Applicants argue that one of ordinary skill in the art would not have had any reason or rationale to utilize zinc sulfide in Sato's resin composition given that the composition disclosed within Sato does not comprise ammonium polyphosphate. However as discussed above, Sato is open to the inclusion of other flame retarding ingredients, i.e. disclosed in Sato as adjuvants and both zinc containing compounds as well as nitrogen containing flame retardant adjuvants, i.e. are contemplated as examples of flame retardants to be utilized in the composition. That is to say, Sato is open to the inclusion of the other flame retardants and thus can reasonably accommodate either zinc sulfide alone or combination of zinc sulfide with APP. In light of the disclosure in Sato of other flame retardants and the disclosure in Lewin of the benefits of zinc sulfide in polymeric compositions, the Examiner's position remains, absent evidence to the contrary, that it would have been obvious to one of ordinary skill in the art to modify the composition disclosed by Sato with zinc sulfide and amounts thereof, disclosed in Lewin with a reasonable expectation of success.

14. Applicants argue that the Examiner has asserted that because Sato discloses that zinc borate may be added to the resin composition that it would have been obvious to utilize zinc sulfide for zinc borate. However, it should be noted that the Examiner has not stated that zinc

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borate should be substituted with zinc sulfide, but rather that the reference is open to the inclusion of other flame retardant ingredients and not merely zinc borate. To this end, it is noted that Sato merely exemplifies other flame retardants, including zinc borate and does not limit the adjuvants to those disclosed.

15. Applicants argue that given that Lewin classifies zinc sulfide and zinc borate as two different type of compounds and Sato only discloses zinc borate and not zinc sulfide, that the Examiner is improperly relying on Applicants' disclosure equating zinc borate and zinc sulfide. However, it is noted that the Examiner's position that the combination of references applied against the present claims flows from the explicit teachings found in the references themselves. That is, Sato discloses the use of flame retardant adjuvants which may be utilized in the combination with the disclosed metallic hydrates while Lewin discloses the benefits of utilizing zinc sulfide and amounts thereof in polymeric compositions.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER C. KOLLIAS whose telephone number is (571)-270-3869. The examiner can normally be reached on Monday-Friday, 8:00 AM -5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. C. K./

Examiner, Art Unit 1725